

METHOD AND APPARATUS FOR MOBILE PICKUP STATIONS

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BACKGROUND OF THE INVENTION

This invention relates generally to the field of shipping and more specifically to the delivery of goods purchased from a distant location.

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Conventionally, products that are ordered by consumers, whether are ordered on the Internet or by other means, are delivered primarily in two ways. In the first way, the buyer/consumer travels to the seller's store and picks up products ordered there. The second way, the seller ships the products to the buyer via common carriers and buyer receives products at the address designated. Both ways are inefficient. The first method costs the buyer the time and energy expended traveling to the seller's store to pickup products ordered. The second method on the other hand, costs the buyer shipping and handling charges and usually takes a considerable amount of delivery time for the products to be shipped.

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The following patents generally indicate the level and depth of prior art shipping systems.

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In U.S. Patent 5,991,739, Cupps et al. disclose a system and method for providing an online ordering machine that manages the distribution of home delivered products over a distributed computer system. The patentee discloses that " The online ordering machine provides the customers with product information from various vendors whose delivery range is within the customer's location or with product information from vendors having a take out service within a specified range from the customer's location."

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In U.S. Patent 6,026,375 Hall et al, disclose methods and systems for processing an order from a mobile customer and with the use of a method of global tracking a determination is made

as to the completion of the order at a certain location at a certain time for the customer's arrival at that location.

5 Neither invention discloses a method and system that allows the seller to conveniently place a pickup station, which is mobile in nature and is easy to relocate, to a place close to the user's daily commute route and thereby provides maximum convenience for the buyer/user to pickup products ordered.

10 A conventional delivery system can be inefficient. Besides the problems conventional delivery system faced as previously discussed, the delivery of products to a buyer's address, normally made during daytime, can be troublesome. The buyer may not be present at the buyer's address to receive the products and  
15 the products may either be left unattended at the buyer's address or the buyer has to pick the product's up later at a common carrier's office. Even when a delivery is made to an office location where presumably someone will be at the address to receive the products, problems may exist. This is because the  
20 common carrier comes and goes following its delivery route and those buyers at the end of the delivery route may waste a significant amount of time waiting for the products to arrive. This waste of time may be crucial and can't be remedied unless a buyer pays a higher price for a faster delivery.

25 As we move into the Internet era, more and more people shop on the Internet. But lots of people are turned away from Internet purchasing because the long delivery time and expensive delivery charges involved.

30 An improved delivery system providing a more efficient way of delivery is, therefore, needed. The present invention meets such need.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide a  
5 delivery system that is convenient for a buyer to receive  
products ordered by the buyer.

It is another object of the present invention to provide an  
efficient delivery method by avoiding costs associated with  
door-to-door delivery.

10 It is another object the present invention to deliver  
products to a buyer face-to-face thus eliminating the risk of  
leaving products at a buyer's address and leaving the products  
unattended when the buyer is not at the address to receive the  
products.

15 It is another object of the present invention to allow a  
distant third party seller to arrange to have a buyer quickly  
receive an ordered product.

It is another object of the present invention to allow a  
buyer to specify a commuting route and search for stores within  
20 a specified distance from the commuting route.

In one embodiment of the invention, scheduling and delivery  
of a product to a buyer along the buyer's commuting route is  
accomplished by receiving route information from a buyer. This  
route information is combined with a channel width to compute  
25 channel area. The channel width is the distance from the route  
the buyer is willing to travel to pickup a product. A set of  
pickup points is selected from a plurality of pickup points based  
on the channel area. The buyer then selects from the set pickup  
points a preferred pickup point. A mobile pickup station is then  
30 dispatched to the pickup point containing the product ordered by  
the buyer.

In another embodiment of the invention, the channel area is  
used in conjunction with a store database to find a store within  
the channel area.

In another embodiment of the invention, products are automatically ordered and scheduled for delivery to the buyer based on the buyer's preferences.

#### BRIEF DESCRIPTION OF THE DRAWINGS

The features, aspects, and advantages of the present invention will become better understood with regard to the following detailed description, accompanying drawings, and appendix where:

FIGS.1, 2 are flowcharts showing the process from user's commuting route selection to user pickup at a mobile pickup station;

FIG. 3 is a flowchart showing an exemplary process to select available pickup points;

FIG. 4 is a flowchart showing third party buying coupling with a mobile pickup station delivery service;

FIG. 5 shows selection of mobile pickup point with two users;

FIG. 6 shows selection of mobile pickup point with new user joining in;

FIG. 7 shows the searching method by using user commuting route and user-selected channel;

FIG. 8 shows user's input of occurrence frequency;

FIG. 9 shows a mobile pickup station with panel in an up position.

FIG. 10 shows the overlapping of user channels and server's selection of available pickup points.

FIG. 11 shows a first model of the arrangement of shipping third party products to a mobile pickup station warehouse.

FIG. 12 shows a second model of the arrangement of shipping third party products to a mobile pickup station warehouse;

FIG. 13 shows a third model of the arrangement of shipping third party products to a mobile pickup station warehouse;

FIG. 14 shows a fourth model of the arrangement of shipping third party products to mobile pickup station warehouse;

5 FIG. 15 is a flowchart presentation of the searching method by using user-commuting route and user selected channel;

FIG. 16 is a network diagram depicting an embodiment of a MPS using the Internet as a communications medium; and

10 FIG. 17 is a diagram of a computer architecture of a general purpose computer capable of hosting a mobile pickup station server.

#### DETAILED DESCRIPTION

15 The present invention is referred to herein a mobile pickup station (MPS) delivery system. A MPS delivery system uses pickup stations in the form of vehicles or movable kiosks used in conjunction with the Internet to provide maximum convenience for a buyer to pickup products. A mobile pickup station may be  
20 stationed along a buyer's frequent commuting route so that a buyer can conveniently pickup products at these stations when traveling via the buyer's usual commute route without spending extra time traveling to a seller's store to pickup products.

Most people commute to work via the same commuting route  
25 everyday. Others, while not working, go to the same place repeatedly. Even the time people start and end their commuting and the time spent on commuting are about the same day after day. The mobile pickup station system encompasses this highly routine human behavior by arranging to ship products a buyer ordered to  
30 a location that is close to the buyer's daily commuting route. Under such an arrangement, a buyer can pickup the products while conducting the buyer's daily commuting without spending extra time to travel to a seller's store for picking up and therefore making it convenient for the buyer to receive products. This  
35 pickup location will be referred to herein as the mobile pickup

point.

FIG. 16 is a network diagram showing an embodiment of an MPS  
5 server using the Internet. A MPS server 1660 is operatively  
coupled to the Internet 1604 via a communications link 1603  
adapted for communications using the Transmission Control  
Protocol/Internet Protocol (TCP/IP) suite of networking protocols  
such as Hyper Text Transfer Protocol (HTTP) for hypertext  
10 document transfer and Simple Mail Transfer Protocol (SMTP) for  
the transfer of electronic (email) messages.

FIG. 17 is a hardware architecture diagram of a general  
purpose computer suitable for use as a MPS server host.  
Microprocessor 1700, comprised of a Central Processing Unit (CPU)  
15 1710, memory cache 1720, and bus interface 1730, is operatively  
coupled via system bus 1735 to main memory 1740 and I/O control  
unit 1745. The I/O interface control unit is operatively coupled  
via I/O local bus 1750 to disk storage controller 1795, video  
controller 1790, keyboard controller 1785, and communications  
20 device 1780. The communications device is adapted to allow  
software objects hosted by the general purpose computer to  
communicate via a network with other software objects. The disk  
storage controller is operatively coupled to disk storage device  
1725. The video controller is operatively coupled to video  
25 monitor 1760. The keyboard controller is operatively coupled to  
keyboard 1765. The network controller is operatively coupled to  
communications device 1796. The communications device provides  
a communications link adapted for communications over the  
Internet.

30 Computer program instructions 1797 implementing a MPS server  
are stored on the disk storage device until the microprocessor  
retrieves the computer program instructions and stores them in  
the main memory. The microprocessor then executes the computer  
program instructions stored in the main memory to implement a MPS  
35 server.

Referring again to FIG. 16, A buyer using a computer 1604 running a an Internet browser to access the MPS server via the Internet. The buyer's computer is operatively coupled to the Internet via a communications link adapted for communications using TCP/IP based networking protocols such as HTTP for hypertext document transfer. The MPS server provides scheduling services for at least one regionally distributed MPS warehouse. Each MPS warehouse communicates with the MPS via the Internet using computers as exemplified by MPS warehouse computers 1606 and 1608. Each MPS warehouse computer is operatively coupled to the Internet via a communications link adapted for communications using TCP/IP based networking protocols such as HTTP for hypertext document transfer and SMTP for the transfer of email messages.

In operation, a buyer accesses the MPS server via the Internet and uses the delivery scheduling services of the MPS server to define a pickup point to be used by the buyer. The MPS server determines which MPS warehouse is to be used to dispatch a MPS to the defined pickup point with the buyer's products.

Referring to Fig 5, user A and user B use the Internet for shopping and order products at the server's website. User A and user B identify their daily preferred commute route as route segment AA 10 and route segment BB 12 respectively. An MPS system stores this route segment information in its permanent memory. Route segment FG 14 is a route segment common to both route segment AA and route segment BB. A MPS system may achieve maximum convenience for both user A and user B by sending a MPS station which carries products ordered by user A and user B and stations at a place that is common to route segments AA and BB (e.g. point J 18) to wait for user A and user B to pickup their ordered products.

A MPS is a vehicle or a movable kiosk that has the capacity to carry products. For instance, in addition to the ability to

carry general non-perishable products, an MPS may be equipped with an electricity generator that may power a refrigerator to carry food or floral products during summer, or a MPS may be equipped with a heating device to keep food products at an elevated temperature during winter ...etc. An ideal MPS mobile pickup point (e.g. point J) is a place that is close to the overlapped user route (e.g. route segment FG), is easy to get access to from the user route and is convenient for the user to park or to walk to. It may be the parking lot of a shopping mall, a gas station or a wide street with capacity to park a MPS and user cars.

A mobile pickup point may also be a place where the MPS system can station a movable kiosk, such as subway station or at a street crossing...etc. A MPS stays at the pickup point for a determined period of time waiting for users to pickup their orders. If the MPS station is a vehicle, an operator drives the station to the designated pickup point and stays there. If the MPS station is a movable kiosk, a truck may drop the kiosk at the designated pickup point and pick it up and return the MPS to a MPS warehouse when the station time is over for reloading.

In one embodiment of a MPS, one or more attendants operate the station by helping buyers obtain the buyer's products.

Referring to Fig 6, assume user C joint a MPS system serving user A and user B. Further assume user C takes commuting route segment CC 28. Because pickup point J 18 is not within user C's commute route CC, the MPS system, in order to achieve maximum convenience to all users A, B, and C, must select a different pickup point to accommodate A, B, and C simultaneously. Point K 30, which is along route segment DE 22 and is common to all route segments AA, BB and CC, can thus be selected as a pickup point to serve users A, B, and C.

Referring to Fig. 1, a buyer uses at step 100 the Internet to access a Website using a personal computer (PC), a laptop, a



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palm pilot or any other means capable of accessing the Internet. The buyer is the person who purchases a product and/or MPS service from the Website. In the case where the Website is maintained by a transportation business entity providing MPS delivery services without selling any physical products, the buyer is the one who uses MPS services to have their products delivered.

10 The buyer goes to the Website hosted by a MPS server at step 102. An MPS server is a server maintained by a business entity that operates a MPS system. It may be a retail or wholesale business entity with a fleet of MPS stations. It may be a transportation business entity, which operates a fleet of MPSs and delivers products for its customers. Or it may be other kind of business entities, which operates a fleet of MPSs.

15 The server asks if the buyer is a first time buyer at step 104. If the buyer is a first time buyer, the system assigns the buyer an ID and a password for his use at step 106. The server provides a template for the buyer to enter his personal information at step 108.

20 The buyer may enter personal information such as name, address, phone number, age, credit card number, etc at step 110. At this stage, the server asks the buyer to enter preference of purchases. This preference is important because it will be a tool the server uses later to screen products and display preferred products to the buyer. For example, if the server is maintained by a food manufacturing company, e.g. a food catering business, preference questions listed may be: does the buyer likes hot and spicy food? Should the food be slightly hot, medium hot, or very hot? If the buyer cares for red meat in the food? Maximum calorie count, fat count in the food, the buyer likes Italian food, Japanese food or others...etc. Also the preference questions may contain dollar limitations the buyer wants to spend on meals.

35 Referring to FIG. 2, the buyer then goes to a

route-selecting mode at step 112 to choose a commuting route. In this mode, a template is presented to the buyer to enter the beginning and the end addresses of the buyer's commuting route at step 114. Once the beginning and the end address of route are defined, the MPS server displays a map with all the possible routes involved at step 116.

Referring to FIG. 7, in one embodiment of a MPS server, a MPS server displays a map 500 that covers the beginning and end address of the buyer's chosen route. The buyer clicks or depress-and-drags the mouse across the map to define a chosen route 570. In another embodiment of the present invention, a buyer is prompted to enter a distance from the buyer's chosen route that the buyer is willing to travel to pickup a product. The distance a from the buyer's chosen route that the buyer is willing to travel is herein termed a channel width. The channel width is used by the MPS server to define channel boundaries 578 and 580 around the chosen route. This channel width combined with the buyer's chosen route creates a channel 572. The buyer may use this channel as a distance reference. Or the buyer may indicate to a MPS server that this channel width is the distance the buyer is willing to travel away from the buyer's commute route.

Alternatively, a buyer may enter the names of some or all the streets or highways the buyer travels to a MPS server, the MPS server will connect those streets or highways together with the shortest distance and further connect the buyer's beginning and end addresses to build a chosen route. The buyer may use the following procedures to click and build his chosen route on a map 500. The buyer starts with his beginning address, e.g. his home address, at this time the MPS server registers a reference point, which is the buyer's home address on the buyer's home street. The buyer then clicks on the map a second street the buyer will travel. The intersection of the second street and the buyer's

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pickup point (e.g. 514) outside of the buyer's channel.

Referring again to the process flow diagram of FIG. 2, the  
5 buyer selects a width for the MPS server to develop a channel  
around a chosen route at step 123. The MPS server then displays  
a channel that wraps around and extends along the route at step  
124 with the defined width. The buyer then clicks or depresses  
and drags the mouse key on the map described in FIG. 7 to define  
10 the buyer's chosen route at step 118.

The buyer can choose to set the chosen route as a default  
route at steps at step 120 and at step 122. If the chosen route  
is a temporary route because the buyer is temporarily traveling  
along a new commute route, the buyer may not want to set the  
15 chosen route as a default route.

The MPS server displays the channel as previously described  
in FIG. 7. The buyer uses the buyer's mouse to click a pickup  
point at step 128. The buyer can set the pickup point to be the  
buyer's default pickup point if the buyer desires at steps 130  
20 and 132. The buyer also may enter the buyer's chosen pickup time  
at step 134. He may also set this pickup time as a default at  
steps 136 and 138. The server may set a station time as the time  
a MPS stays at the pickup point. For example, the MPS server may  
set station time between 4p.m. to 7 p.m. or 6 a.m. to 9a.m and  
25 the buyer comes between those times to pickup the buyer's  
products. If no station time is set, a MPS may stay at the pickup  
point until all scheduled buyers pickup their products.

The pickup time entry, in the case of no station time being  
set, gives the MPS server a planning tool as how long a MPS will  
30 stay at a pickup point before the MPS is sent to a next  
assignment.

On one embodiment of a MPS server, the pickup time entry may  
be also used as a guide to send a reminder to a buyer for  
pickups. For example, if a buyer enters 7:30 a.m. as the buyer's  
35 pickup time, the MPS server may send a reminder at 7:00 a.m. to

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the buyer to remind the buyer that the buyer has an order to pickup. The reminder may be very important if the order is to be  
5 picked up early in the morning. The reminder may be in the form of telephone calls to the buyer's office, home, or cellular phone. It may also be in the form of e-mails or messages sent to a buyer's palm pilot or it may be by other means permitted by technology.

10 Referring again to FIG. 1, after finishing input of all setup information, a buyer proceeds to step 140. The MPS server displays product categories for the buyer to choose if the buyer does not want to change any information at step 144. Product  
15 categories are different groups of products sold by a seller. For a food producing company (e.g. a food catering business or a lunch/dinner delivery business) the categories may be: drinks, wine, Italian food, French food, Japanese food, deserts, pizza or other products the server is selling. The MPS server may display only those categories that match the buyer's preference  
20 and disregard those that the buyer is not interested in purchasing. The buyer clicks on the category the buyer wants to purchase at step 146. The MPS server brings up all products under category buyer selected at step 148. The products displayed may be subject to the same screening process as previously described,  
25 which is, only products that match the buyer's preference are displayed and any other products are disregarded. The MPS server displays product features along with products. Those features displayed may be: ingredients, calorie counts, fat count, and price...etc. The MPS server may also employ newly developed  
30 technology that gives out the scent of the food when buyer reviews its product information to stimulate purchases. The buyer, after reviewing product items, decides to order and goes to order mode at step 150.

In one embodiment, a MPS server provides a Automatic  
35 Selection Method (ASM) service. This is a MPS server service

designed for a buyer, who does not want to go through the trouble of ordering repeatedly and, after establish the buyer's preferences with the MPS server, want the MPS server to fill orders for the buyer according to the buyer's preferences. As an example, a buyer, who has set up a buyer's preference as follows: calorie under 600, fat under 30 grams, no red meat, no onion...etc, wants to use the MPS server to order food at step 152.

The MPS server follows the following steps to fill orders for him: The MPS server displays a calendar at step 154. The buyer marks on the calendar to indicate the days on the calendar the buyer wants to order products to be delivered at step 156. The buyer can choose to set different routes, pickup points and pickup time for each day on the calendar as described in steps 112-138 (FIG. 2). The buyer may use a default route, pickup point or pickup time information as previously entered in steps 158 and 160. The buyer can modify the buyer's preference if the buyer desires at step 162. The buyer may set up the "occurrence rate" for each product to appear on the buyer's menu at step 164. Occurrence rate is the percentage of times an item appears on the buyer's total orders.

FIG. 8 is a sample template for a buyer to enter occurrence rates. An entry of a 20% occurrence rate for pizza 600 means the buyer wants 20 % of the buyer's total orders to be pizza when the MPS server fills orders for him using ASM service. The MPS server can also be set up so that the same item will not appear twice consecutively.

Referring again to FIG. 1, the MPS server randomly fills orders for the buyer according to the buyer's preference and occurrence rate entered at step 166. If no change is to be made about the orders, the buyer then decides if the buyer wants to place orders in other categories at steps 168 and 170. If the buyer wants to place an order in another category, the buyer goes to category selection at step 146 and follows the same procedure

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as described before. If buyer does not want to shop for any other categories, the buyer makes payments at step 172.

5 The MPS server regularly checks buyer orders to see if there is any order or delivery that is due at step 174. If an order is due the MPS server prepares for production or makes inventory requisitions.

Referring again to FIG. 2, the MPS server collects buyer's names, pickup points, pickup times and other related information for due orders at step 176. The server first groups orders by buyer name at step 178. The MPS server may keep a total of all orders that have identical or nearby delivery addresses. The MPS server decides how physically close those addresses are to be qualified as "nearby". A delivery address is part of the information a buyer inputs when a buyer enters their preferences.

Delivery addresses are the addresses an MPS server will deliver products to, when the following circumstances occurs. The MPS server may decide that it is feasible for the MPS server to deliver products to a buyer at the buyer's physical address, (not deliver to a MPS pickup point for buyer to pickup, but deliver to the buyer's physical delivery address), if orders with the same or nearby delivery address are over a predetermined amount. Once the MPS server decides it is feasible to deliver, the MPS server sends a message to those related buyers notifying them that the products they ordered will be delivered to their delivery addresses. For buyers that agree to the delivery, the MPS server arranges the products to be delivered to them at their delivery addresses.

30 For those orders the MPS server does not deliver to a buyer's delivery address, the MPS server further groups those orders by pickup points at step 180. At this time, all orders are grouped by buyer name and by pickup point and are waiting to be shipped by MPS to MPS pickup points. The MPS server calculates the size of the load (orders) that need to be shipped to the MPS

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pickup point and assigns a MPS with enough capacity to execute the shipment at step 184. The MPS, after being loaded with  
5 orders, is dispatched to an assigned pickup point at step 186. The MPS server can determine the timing of dispatching MPSs to pickup points. For example, if a MPS is needed at a pickup point at 4:00 PM and MPS server also determines that the time spent on travel from the MPS server's warehouse to a MPS pickup point is  
10 about 1 hour, the MPS server determines that the MPS should leave the MPS warehouse at about 3 PM.

A MPS server may send out a reminder to a buyer to remind the buyer to pick up the buyer's products at step 188. The reminder may be sent by e-mail, a telephone call to a buyer's  
15 cellular phone or office, or by sending a message to the buyer's palm pilot. With a buyer who equipped with Mobile Location Determination System (MLDS), Global Positioning System (GPS) or car navigation system, the MPS server may, upon detecting that the buyer is near the buyer's pickup point, send a message to the  
20 buyer to remind the buyer to pick up products ordered and give the buyer the directions to the pickup point.

When a MPS arrives at a pickup point, the MPS stays there for the station time at step 190 and waits for buyers to pickup products at step 192. The MPS may install a sign, fly a balloon,  
25 or turn on a search light for buyer's easy identification. Also, a MPS may have microwave ovens for the buyer's convenience in heating up food the buyer picked up.

Referring to FIG. 9, a MPS may also install a panel 900. When the panel is pulled up to the panel's up position 902, the  
30 panel will shelter a buyer from the rain, snow or sunlight. When in the case the MPS is a truck, the panel provides the buyer a "drive-thru" lane. A buyer can thus pickup products ordered without leaving the buyer's car.

Referring again to FIG. 2, when a buyer picks up a product  
35 at step 192, the operator of a MPS may want the buyer to sign a



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receipt as evidence of receiving products. If buyer fails to pickup orders at step 194, the MPS operator may follow the buyer's instructions as how to handle those non-picked up products. A MPS server may give instructions such as: return those non-pickup products to a MPS warehouse for re-delivery or sell the non-picked up products for whatever the operator can sell and credit the buyer for the amount sold ...etc. When the station time is up, the MPS leaves the MPS pickup point at step 196. For the maximum use of an MPS, it may be moved to another location to carry out other assignments at step 198.

If the buyer wants to order manually instead of using an ASM service to order at step 152, also if the delivery is not for the current day at step 153 and the selection of order is not complete at step 202, the MPS server provides a calendar at step 204 for the buyer to select the days of order/delivery desired. The buyer manually marks on calendar the days the buyer wants to order a product and have it delivered at step 206, and the buyer fills those days with an order at step 208. The buyer may specify a different route at step 210 and pickup time at step 212 for each day by using the same procedure as described before.

If the manual selection of orders is complete at step 202, the buyer makes decision as to whether the buyer wants to make other orders at step 170. If the buyer does want to make other orders, the buyer selects a category at step 146, if not, the buyer makes payments on the existing orders at step 172. If the buyer wants to order manually instead of using an ASM service at step 152, and if the order/delivery is for the current day at step 153, the buyer goes into the order mode and places an order at step 220. The buyer may change route, pickup point at step 224 and pickup time at step 226 as previously described.

As previously described, after a buyer establishes the buyer's chosen route and defines a channel width, a MPS server presents available pickup points within or around the buyer's

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channel for buyer's selection. Several different methods may be used by a MPS server to determine available pickup points for the  
5 buyer's selection.

An approximate method may be used when the MPS server does not have enough information about buyers' chosen commuting routes to establish a buyer route distribution within a region. The MPS server may then use traffic volume on a route (i.e. a highway or  
10 a street) as a guide to approximate buyer route concentrations and place available pickup points along the route for buyer selection. A highly traveled highway may be assumed to have a high route concentration. The same assumption may be made for a busy major street. The MPS server may thus present pickup  
15 points along those routes. Other criteria in determining available pickup points may be considered and will be disclosed later.

FIG. 3 is a process flow diagram of a method used by a MPS server for selecting a route using an overlap route method. In this method, the MPS server collects buyer chosen commute routes and channels from buyer input at step 300. The MPS server then overlaps all channeled chosen routes defined by all buyers at  
20 step 304. The MPS server may for every overlapped area select the overlapped area as an area for available pickup points at step 306. In addition to overlapping, the MPS server may consider other criteria at step 308. Other criteria the MPS server might consider are: is rent involved for using a pickup point? How much is the rent? Is the pickup point far away from the buyer's route? Is the pickup point convenient to get access to from a  
25 buyer's route? Is parking sufficient? Is the pickup point easy to identify...etc. The MPS server makes a decision and selects available pickup points at step 310.

A buyer chooses a buyer's chosen pickup point and/or default pickup point among those available pickup points provided by the  
35 MPS server. If the MPS server needs to provide more pickup

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points to the buyer, the MPS server goes to step 308 for more  
selections. The MPS server may change parameters to expand or  
5 contract the area of available pickup points at step 314. From  
time to time, the MPS server may periodically review buyers'  
chosen commuting routes at step 316 to see if buyer route  
distributions have changed. If buyer route distributions have  
changed, the MPS server can correspondingly reposition its pickup  
10 points to better serve buyers. If the time for route reviewing  
is due at step 318, the MPS server starts the whole process all  
over to update the MPS pickup point positioning at step 300.

FIG. 10 is a graphical representation of a MPS pickup point  
area assessment. Assume that PP 1000 is a route, e.g. a highway  
15 or a major street with heavy traffic. Buyers R , S, and T each  
have a buyer's chosen route. Buyer R has chosen route RR 1010,  
buyer S has chosen route SS 1020, and buyer T has chosen route  
TT 1030. Also assume that in the beginning, a MPS server does not  
have any route information pertaining to buyers R, S, an T. the  
20 MPS server can only use an approximate method to choose a pickup  
point, for example, point U 1030. Under this method, buyers R,  
S, and T have to travel out of their chosen channels to get  
access to point U.

Now assuming the buyer routes are available to the MPS  
25 server. The MPS server overlap all chosen channels from for all  
of the buyers to form an overlapped area QQ 1040. Area QQ will  
be qualified as a pickup point selection area, because QQ is the  
area overlapped by multiple chosen routes, namely, RR, SS and TT.  
The MPS server may propose pickup points within this available  
30 pickup point selection area QQ to a buyer wishing to pickup a  
product.

Now assume that points W 1050, X 1060, and Y 1070 are  
locations inside area QQ that the MPS server considers as  
possible pickup points. Also assume that point W is a parking lot  
35 in a major super market, W is also close to route PP and easily

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accessed from route PP. The MPS server selects W to be a pickup point after the MPS server considers all criteria. Point W is then presented to buyers R, S and T and W can be chosen as a pickup point. A buyer may then abandon their original pickup point U and position the new pickup point at W. The MPS server may propose more than one available pickup point in an available pickup point selection area depending upon buyer route concentration, e.g. X or Y may be selected as available pickup points also if the MPS server desires.

In another embodiment of the present invention, a MPS server acts as a third party delivery MPS server. A third party is a business entity other than the entity providing the MPS server itself that has an agreement with a MPS server to use a MPS server services to serve the third party's customer. For example, a local flower shop may receive orders on line from a buyer. The flower shop allows the buyer to access a MPS server operated by an entity other than the flower shop so that the buyer can use the MPS server to position a pickup point and pickup flowers ordered there. This flower shop is a third party seller.

Sometimes a third party seller's customer may already have a preferred MPS pickup point established with a MPS server because of previous orders with other companies. In this case, the third party seller only needs to confirm that the buyer wants to use the MPS service to pickup flowers ordered, the flower shop then makes arrangements with the MPS server so that the flower ordered may reach the pickup point for the buyer to pickup. The arrangements between the third party seller and a MPS server with regards to the shipment of products from the third party seller to a MPS warehouse may take many forms and will be discussed in more detail later.

Upon receipt of the third party's products, a MPS server searches to see if the buyer has other orders that can also use MPS service. If the buyer does have other orders, the MPS service

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groups all orders pertaining to the same buyer and uses a single  
MPS to deliver those products to a MPS pickup point for pickup  
5 by the buyer.

FIG. 4 is a process flow diagram of a third party seller  
ordering process. A buyer goes on to the Internet at step 400,  
and goes to a third party's Web site at step 402. The buyer makes  
orders at step 404, the buyer then makes decision as to what  
10 delivery options the buyer will use at step 406. The buyer  
decides if the buyer wants to use conventional delivery methods  
to ship the buyer's order, which usually involves shipment by  
common carriers (e.g. by UPS or US Post Office), or uses MPS  
pickup MPS server so that the buyer can pickup the buyer's order  
15 at a pickup point. Assuming the buyer wants to use a MPS service,  
the buyer goes to a MPS server Web site at step 408.

At the MPS server Web site, the buyer either sets up to  
establish a pickup route and pickup point with the MPS server or  
updates route and pickup point information already established  
20 with the MPS server from previous purchase with the MPS server  
at step 410. The third party seller keeps a record of the buyer's  
order together with all related shipping information.

The third party seller may establish an order cut off time,  
which is the latest time for order receiving. An effective cut  
25 off time allows the seller enough time to pack and arrange  
ordered products to be shipped to a MPS warehouse before a MPS  
server dispatches to MPSs to pickup points. For example, assume  
a MPS leaves a MPS warehouse the heading for a MPS pickup point  
at 3:30 PM. Also assume that it takes 30 minutes for the seller  
30 to process and pack orders and it takes another 30 minutes for  
the products to be shipped to the MPS warehouse, the order cut  
off time will be set at 2:30 PM. If a buyer orders before cut off  
time at step 414, the third party seller then arranges the  
ordered products to be shipped to the MPS warehouse at 418.

35 There are various ways products can be shipped to a MPS

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warehouse, which will be disclosed later. Once ordered products are shipped to a MPS warehouse, the products are loaded on to a MPS and then the MPS moves to a MPS pickup point at step 420 and waits for buyers to pickup up products at step 422.

In the case where a buyer orders after the cut off time of 2:30 PM, as set in the above example, the third party seller may impose an extra delivery fee to deliver the order to a preferred pickup point and the buyer can pickup the buyer's order at that pickup point. In this case, the third party seller logs on to a MPS server. The MPS server displays a map that covers the third party seller's location and the buyer's route at step 424. The MPS server also displays the buyer's default pickup point and other available pickup points near the route. The seller selects a pickup point for delivery at step 426 and quotes the buyer the price of delivery to that pickup point. If buyer agrees with the quotation and other terms at step 428, the products are delivered to that specified pickup point for buyer to pickup at step 422. If no pickup point is satisfactory to the buyer, other arrangements have to be made at step 436 or the sale is cancelled at step 434.

As previously discussed when discussing step 418 of FIG. 4, various arrangements for the shipment of products from a third party seller's store to a MPS warehouse may be made. These arrangements may take many forms.

In one embodiment of a MPS server, as illustrated in FIG. 11, a MPS warehouse 700 sends out transportation equipment, e.g. MPSs, to the warehouses of a third party seller S1 702 and a third party seller S2 704 to pick up products ordered by buyers. The MPSs then go back to the MPS warehouse for packing and distribution or goe directly back to the appropriate pickup points.

In an alternative embodiment of a MPS server, as illustrated in FIG. 12, a third party seller S3 706 and a third party seller

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S4 708 ship buyer ordered products to a MPS warehouse 700 by their own transportation means. S5 710, another third party seller, which is local to one of the pickup points 712, may choose to ship buyer ordered products directly to the pickup point 712. A MPS that stays at pickup point 712 receives the products and waits for a buyer to pickup the products. Third party seller S3 may use route 716 to deliver a portion of orders directly to a pickup station 718 and at the same time deliver another portion of orders to the MPS warehouse 700.

In another alternative embodiment of a MPS server, as illustrated in FIG. 13, third party seller S6 720 and third party seller S7 724 can be at the same location with a MPS warehouse 700. The third party sellers may be different entities that share the same warehouse or they may be different divisions that belong to the same entity. In this model, because the third party sellers are so closely located to each other, the order cut off time can be close to the time MPSs are dispatched to pickup points.

In another alternative embodiment of a MPS server, as illustrated in FIG. 14, third party sellers loan each other products to ease short term deficiencies in product supplies at a buyer's location. Assume that a third party seller S8 750 is a distant third party seller away from a MPS warehouse 700. A distant seller is a seller that is located far away from a MPS warehouse that serves a buyer. A seller S8 750 receives an order from a buyer 752 via the Internet or by other means 748. Assuming a third party seller S9 754 and a third party seller S10 756 are affiliates to S8 and each has an inventory loan agreement with S8. Third party sellers S9 and S10 may be related or unrelated business entities, or strategic partners to third party seller S8. Or third party sellers S9 and S10 may simply be warehouses owned by and apart from S8. For the purpose of this case, third party sellers S9 and S10 may be any kind of entities as long as

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third party sellers S9 and S10 have inventory loan agreements with third party seller S8.

5 In this case, third party seller S8 receives an order from a buyer and contacts third party sellers S9 and S10 to see if third party sellers S9 and S10 carry the same products as the products the buyer ordered. Third party seller S8 finds third party sellers S9 and S10 by using a search method called  
10 "Territory Search Method" to be described. Third party seller S8 then checks to see if third party sellers S9 or S10 can loan the item to third party seller S8 by shipping to the buyer the identical products the buyer orders. If both third party sellers S9 and S10 carry the ordered products, third party seller S8  
15 proceeds with the loan transaction arrangement with the third party seller who would charge third party seller S8 the least.

For example, if third party seller S9 is willing to proceed with a loaner transaction with third party seller S8, third party seller S9 ships a product the buyer ordered to the buyer's  
20 previously described delivery address or to the buyer's previously described preferred MPS pickup point based on the shipment method the buyer prefers. At this point third party seller S8 owes an identical product to third party seller S9. To perfect and secure the transaction to be an inventory loan  
25 transaction between third party sellers S8 and S9, agreements 770 between third party sellers S8 and S9 should be maintained. Such agreements may include provisions such as: third party seller S9 will be paid back by receiving the identical products from third party seller S8 only; third party seller S9 is paid a processing  
30 fee for the loan arrangement; third party seller S9 will not be paid for the products loaned by money; third party seller S9 does not receive any exchange for other products from third party seller S8; third party seller S9 will ship products to the buyer only after third party seller S9 receives a confirmation from  
35 third party seller S8 stating that identical products have been



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shipped to third party seller S9; and third party seller S8 is  
the party solely responsible for the quality of products shipped  
5 and any related customer-seller dispute will be resolved between  
third party seller S8 and the buyer. In a product loan  
transaction, third party seller S9 never sells any products and  
keeps the same amount of inventory on the buyer's book. In  
reality, the buyer may not even realize that third party seller  
10 S9 exists. Any legal arrangements that may deal with title, risk,  
responsibility, insurance or others, as long as it will make this  
transaction a sale between the buyer and third party seller S8  
and not a sale between the buyer and third party seller S9 will  
be instituted.

15 After third party seller S8 750 receives an order 748 from  
the buyer 752, and after the third party seller S8 and the third  
party seller S9 754 have secured an inventory loan agreement 770,  
third party seller S9 ships the products ordered to the buyer.  
Third party seller S9 may ship directly to the buyer address by  
20 common carrier 760, or by a MPS server 762. Third party seller  
S8 returns 764 the products loaned to third party seller S9.  
Assuming the buyer wants to use a MPS service, the buyer picks  
up the order at MPS pickup point 774.

Of course, as long as both parties agree, third party seller  
25 S8 may pay off third party seller S9 for the products loaned by  
paying money rather than delivering an identical product to S9.  
Such a payment, however, may cause third party seller S9 to  
recognize a sale. Also, if third party seller S9 is a distant  
warehouse and owned by third party seller S8, third party seller  
30 S8 may instruct third party seller S9 to ship products the buyer  
ordered (either to the buyer by common carriers or by a MPS  
service) without an inventory loan agreement. In this case, third  
party seller S9 may have to recognize a sale with the buyer  
especially with interstate transactions.

35 One embodiment of a MPS server provides for a channeled

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route search method in which the MPS server utilizes the commuting route and channel building technique previously described to carry out searches for products buyer wants to purchase. For example, a buyer wants to buy a car battery, the buyer goes to the Internet and logs on to a MPS server in search mode. The MPS server displays a map. A buyer may click or depress and drag the buyer's mouse on the map to define a route. The buyer may further define a width of a channel to form a channeled route and search within this channel for stores that carry the products the buyer wants to purchase.

Referring again to FIG. 7, the buyer through clicks or drag of mouse define route 570. Assuming the buyer wants to search for a store with 1/4-mile distance along the buyer's commuting route, the use sets a channel width size of 1/4 mile. The MPS server displays a channel 572 with boundaries 578, 580. Each boundary is 1/4 mile apart from the route 570. The MPS server will later search to see if there are any stores within the channel that carry the product the buyer wants. The MPS server accesses a database that contains stores with information such as: name, products carries, product price, address (with zip code) and telephone number...etc.

The MPS server first determines all the Zip Codes that are covered by the channel. A zip code is covered by the channel as long as any portion of the zip code area is within the channel. For example, zip codes 92001 and 92003 are covered by channel 572. Zip code 92005 and 92009 are not. The MPS server goes to a database to search for all stores that carry car batteries and also with zip codes 92001 or 92003. All the car battery carrying stores with zip codes 92001 or 92003 are selected for the next test, and those stores with other zip codes, e.g. 92005 or 92009, are disregarded. If no stores are found in this search, the buyer may change the width of channel or change the buyer's selected route to launch another search. If there are stores that carry

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car batteries with channel matching zip codes (i.e.. with zip codes that match 92001 or 92003), the MPS server saves these stores in memory and goes to the next step.

The MPS server searches for all the street names covered by (or within) the channel. Any street name or avenue name is covered by (or within) the channel as long as any portion of the street or avenue is inside the channel. For example, the channel covers Texas Street 592 and also Robinson Ave 594. MPS server compares all the street names within this channel to the street name of those stores with matching zip codes selected from above step. At this stage, all car battery carrying stores, with matching zip codes and with street names matching any of the street names within the channel are selected for the next test and the others are disregarded. For example, after the zip code test, all stores with street names such as "Hawthorn Street" 582 are disregarded and all stores with street names such as "The 31st Street" 584, Texas Street 592 or Robinson Ave 594 are selected for the next test. This is because Hawthorn Street is not covered by the channel and 31st Street and Texas Street are. Again, if there is no match found, the buyer can either enlarge the width of channel or change the buyer's commute route to launch another search.

If there are stores that match the above tests, the MPS server goes to the next step. The MPS server, after the buyer defines the width of the channel, can determine the street numbers (or street addresses, as sometimes called by people) at the boundaries of the channel. That is, the MPS server can determine the street numbers of points such as M 588 and N 590. The MPS server, then determines if those matching stores from the above steps have a street number that falls between the boundary points such as M and N. If the store does have a street number that falls between boundary points like M and N, the store is selected and is presented to the buyer, if not, the store is

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screened out and disregarded. For example, suppose the MPS server determines the address number of M 588 is 2002 31<sup>st</sup> Street and the address number of N 590 is 1800 31<sup>st</sup> Street, a store with street address number 1900 31<sup>st</sup> Street will be selected and a store with address 2300 31<sup>st</sup> Street is disregarded. If no store is selected, the buyer can modify channel width and commute route to perform another search. After the buyer finds those stores that carry products the buyer wants to but by using this search method, the buyer can go to the store's web site and place order. The buyer then decides whether the buyer wants to use a MPS service for pickup. If the buyer wants to, the MPS server goes to step 406 (FIG. 4) and continues the procedures as described previously.

Fig 15 is a flowchart presentation of the above search method. A buyer uses a Web browser to access a MPS server at step 800. The buyer enters a channel search mode at step 802. The buyer defines a route and a channel as previously described in step 804. The MPS server displays the channel to the buyer at step 806. The user selects a product to search for at step 808. The MPS server searches a store database for stores carrying the searched for product at step 810. The MPS server determines channel Zip codes covered by the channel as previously described at step 812. The MPS server matches the channel Zip codes found in step 812 to store Zip codes of stores found in step 810. The MPS server determines if any store Zip codes matched any channel Zip codes at step 816. If no matches were found, the buyer is invited to modify the search parameters at step 818.

If the MPS server determines that there are matches between the channel Zip codes and the store Zip codes, the MPS server determines the street names covered by the channel in step 820. The MPS server matches store street names to channel street names to determine if a store might fall within the channel at step

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822. If there are no matching store street names and channel  
street names, the buyer is invited to redefine the search  
5 parameters at step 818.

If the MPS server determines that there are matches between  
the channel street names and the store street names, at step 826  
the MPS server determines if a store street number is within the  
channel boundaries as previously described. If there is a store  
10 street number within the channel boundaries, the MPS server  
displays the store to the buyer at step 828. If there are no  
store numbers within the channel boundaries then the MPS server  
invites the buyer to redefine the search parameters at step 818.

In one embodiment of a MPS server, the MPS server allows a  
15 third party seller to search for another third party seller  
within a specified territory. Referring again to FIG. 14, third  
party seller S8 750 uses a MPS server to locate affiliated third  
party sellers S9 754 and S10 756 that are within a territory 780  
of a MPS warehouse 700 that serves a buyer's 752 preferred  
20 pickup point 774. The MPS server may operate on a territorial  
basis, i.e. a MPS warehouse may be assigned a regional territory  
780 and serve a number of pickup points 774 and 778 that are  
within its territory while other MPS warehouses may cover and  
serve other pickup points 768 within the other MPS warehouses  
25 respective territories.

When the buyer places an order with third party seller S8  
and the buyer wants to use MPS services, the buyer tells third  
party seller S8 a pickup point ID number that is assigned and  
used to identify the buyer's preferred pickup point. Third party  
30 seller S8 then transmit the buyer's pickup point number along  
with all the addresses of its affiliates to the MPS server. The  
MPS server uses the transmitted buyer pickup point number to  
identify the MPS warehouse that serves the buyer's preferred  
pickup point.

35 In this embodiment of a MPS server, every MPS warehouse is

assigned a territory. A MPS server's territory is determined by a MPS server according to criteria such as: number of buyers served, buyers' demographic distributions, distances a MPS has to travel, time a MPS spends when traveling to MPS pickup points ...etc. Every territory, e.g. 780, has its boundary, e.g. 782, and may be in different shapes as needed, e.g. it may be in the shape of rectangular, circle or other irregular shapes. Each point on the boundary has a known distance and relative direction to MPS warehouse, therefore the street address of each point on the boundary can be determined.

The MPS server then determines the zip codes and street names that are covered by the territory using the same method as previously described in the channeled route search method along with the affiliates' addresses provided by the third party seller S8, the MPS server may be able to identify those affiliates that are within the territory of the MPS warehouse which serves the buyer's pickup point. Using the same procedures as used in the channeled route search method, the MPS server first screens out those affiliates with zip codes not covered within the territory. The MPS server then screens out those affiliates with street names not covered by the territory. Finally, by establishing the addresses at the boundary, the MPS server may determine those affiliates with addresses that are covered by the MPS warehouse territory. the MPS server then presents these affiliates to the third party seller S8 for selection.

In one embodiment of a MPS server, a buyer specifies another party to pickup the buyer's products. The buyer uses a MPS server to modify the pickup point to be a place where a picking up person prefers. The buyer can also specify the name of the picking up person and request that a MPS operator check the ID of the person who picks up the product to ensure proper pickup. In the case where the MPS server is operated by an entity that engages in the business of delivery or transportation, the

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service that MPS server provides is the transport of the buyer's product or packages to a pickup point the picking up person desires and waits for the picking up person to pickup.

In one embodiment of a MPS, the MPS may contain lockers that may vary in size, with each locker containing products ordered by a buyer. The lockers are accessed using an entry code assigned temporarily to the locker and given to a buyer. When the MPS server loads the MPS with products buyers ordered, the MPS is transported to a pick up point. A buyer, after completing his order, receives a locker identifier and access code to open the locker. The buyer goes to the pick up point where the MPS is positioned, and uses the access code to open the locker to receive the product ordered.

In one embodiment, the MPS takes the form of a kiosk which may be secured to the ground or a wall by a lock so that it can not be moved easily. In this way, it may not be necessary for an operator to attend to the kiosk during operation.

In one embodiment of a MPS server, Fixed Pickup Stations (FPSs) are established within a territory established by a MPS server. For example, there may be stores, e.g. gasoline stations, convenience stores or super markets...etc, that are located within the previously described available pickup points selection area. The MPS server may wish to contract with these stores to be pickup stations for MPS buyers. If a store agrees and an agreement is reached by the entity operating a MPS server and the store operators, the store becomes a FPS and will be one of the pickup points that are available for MPS buyers to select as pickup points. The MPS server then arranges for products ordered by buyers to be shipped to the FPS. Each FPS station may be used as a pickup point as well as a drop off point, the same way as a regular MPS.

In one embodiment of a FPS according to the present invention, the FPS can be provided with lockers. In this case,

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the FPS lockers are filled products ordered by buyers. The FPS  
is equipped with a computer that will change the code of each  
5 locker according to a schedule.

A MPS can be a receiving station as well as a drop off  
station. A drop off station is a station where a user submits to  
MPS personnel packages the user wants the MPS service to ship to  
a receiver. The MPS server, after receiving packages dropped off  
10 from the user ships the packages back to a MPS warehouse for  
distribution. After distribution, the packages may be shipped to  
a MPS pickup point that is convenient to the receiver's commuting  
route, or shipped by other means, such as shipped by a common  
carrier, e.g. UPS, for delivery to a receiver. In the case where  
15 a MPS server is a delivery or transportation business entity,  
such as FedEx, a MPS can be used as a pickup station for those  
designated receivers to pickup their packages. A MPS can also be  
used as a drop off station for those users to drop the packages  
they want the MPS server to ship to the packages receivers.  
20 Again, after a MPS receives such packages from the user, the MPS  
will ship the packages back to a MPS warehouse for distribution.

Having thus described several exemplary implementations of  
the invention, it will be apparent that various alterations and  
modifications can be made without departing from the inventions  
or the concepts discussed the herein. Such operations and  
25 modifications, though not expressly described above, are  
nonetheless intended and implied to be within the spirit and the  
scope of the inventions. Accordingly, the foregoing description  
is intended to be illustrative only.

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